HOLE NO: CW 81-2

LOCATION: SE 1/4, NW 1/4 SECTION 33, T 13 N, R 13 W, Tyonek (A-5) Quadrangle, Alaska

COLLAR ELEVATION: 450 m		44.	2/.	3/	4/ 1			5/	UNCONFINED 6/	ULTRASONIC VELOCITY
			ATTERBERG LIMITS plastic liquid Natural moisture	Natural densityDry bulk density	SLAKE DURABILITY INDEX		AD STRENGTH INDE		COMPRESSIVE	Compressional-wave velocity Shear-wave velocity
LITHOLOGIC DESCRIPTION	LiT %	of dry weight	x Organic content (%) Percent 10 30 50 70 90	 Grain density in g/cc 1,3 1,5 1,7 1,9 2,1 2,3 2,5 2 	% Remaining (after 2 cycles) .7 10 30 50 70 90	MN/m ² 1.0 2.0 3.0 4.0 5.0	MN/m ² 1,0 2,0 3,0 4,0 5,0	(1)/(II) 1,0 2,0	MN/m ² 1,0 2,0 3,0 4,0 5,0	meters/second 500 1000 1500 2000
No recovery zone, organic material and ash beds		-0 90 10 80								
Diamicton, grain size ranges from clay to boulders, metamorphic clasts in matrix of silt and sand, no distinct contact										
Sandstone, light-olive-gray to medium-gray, very finely laminated, very fine-grained, silty, thin ash layer(?) at 5.56 m Sandstone, medium-gray, very fine-grained	5—		•	•					·	
Siltstone, medium-dark-gray to medium-gray, clayey, massive, zones of coaly fragments and very fine-grained sand			· ————————————————————————————————————							
Siltstone, light-olive-brown, very clayey Siltstone, olive-gray to medium-gray, clayey, finely laminated	10		× .							
Siltstone, dark-gray, very clayey, finely laminated, carbonaceous			•							
Siltstone, medium-gray to dark-gray, very clayey, fine to obscurely laminated, carbonaceous, occasional coal fragments along apparent	15		×							
fractures near base	20									
Coal, "M bed", black- to dark-yellowish-brown, finely laminated, bedding dips approximately 25° from the horizontal with dominant fractures nearly vertical with respect to the core, or 65° with respect to the bedding planes, coal broken in places into disks, and in other places as cubes, high-angle fractures noted in broken areas, interbeds of carbonaceous claystone at 23.1 - 23.3 m, 25.9 - 26.2 m, and 31.9 - 32.0 m, grayish-brown to dark-gray	25—					12.9	26.		12.4	1 233
Interbeds of coal and carbonaceous claystone, dusky-yellowish-brown to grayish-black	-									
Claystone, dusky-yellowish-brown to grayish-black Coal, black, finely laminated with clay and coaly breccia along fractures Claystone, medium-dark-gray to medium-gray, carbonaceous with noncarbonaceous zones at 37.0 to 37.4 m and 38.1 to 38.4 m Claystone, medium-gray, massive, silty	35—		* × *	+			8	.3		
Sandstone fine grained friable from 39.9 - 40.8 m. very firm from 40.8	40		•	1				5.4	32.2	
to 41.1 m and strongly reactant to 0.1 M HCL in this zone Sandstone, fine- to medium-grained, friable, strongly reactant to HCL				-					33.	364
No core recovery, but from cuttings and geophysical logs the material is interpreted to be a very fine- to coarse-grained sandstone	45-									
Sandstone, pale-olive, fine- to medium-grained, angular grains, well-cemented, very fine pebbles from 50.4 - 50.5 m, strongly reactant to HCL	, 50————————————————————————————————————						5	5.2		0 4827
No core recovery but cuttings, pulled plugged bit shows the material to be medium- to coarse-grained sandstone with small milky quartz pebbles, noncalcareous, non indurated Claystone, medium-dark-gray to medium-gray, silty at top Sandstone, pale-olive, fine- to coarse-grained, friable Claystone, olive-black to olive-gray to dark-gray, finely laminated, occasional coaly lenses approximately 1 cm thick	55-		×	•		6	3.1			
Coal, blackish-brown, with interbeds of carbonaceous claystone, top of "O bed"	60		•	•				-		
Claystone, as above Coal, black- to blackish-brown, high-angle fractures from 60.8 - 61.3 m, coal below fracture zone is competent	-									
Interbedded coal and carbonaceous claystone, brownish-black, very finely	65							6.4		
Claystone, light-brownish-gray, coal fragments along apparent fractures Claystone, dark-yellow-brown, very finely laminated, carbonaceous, weak reaction to HCL Interrbedded coal and claystone, brownish-black			×				·	8.2	7	2
Coal, black, claystone interbeds Claystone, brownish-gray, very finely laminated Coal, brownish-black, claystone interbeds Coal, black, high-angle fractures and broken zones Interbedded coal and carbonaceous claystone, light-brownish-black Coal, black	70-		•	→					11	.6
Claystone, medium-gray, silty, wavy lamination Siltstone, medium-dark-gray, finely laminated, carbonaceous Coal, black, bottom of "O bed"	75-		*. ×*					9.0	20	.9
Claystone, medium-dark-gray to dark-gray, massive, silty Claystone, dark-gray, carbonaceous with wavy carbonaceous stringers and carbonaceous twigs Claystone, medium-gray to medium-dark-gray, silty	80		x		•		→ →	6.2	→ ·	7.8
Claystone, medium-gray to medium-dark-gray, contorted lamina, carbonaceous Claystone, medium-gray to medium-dark-gray, becomes increasingly more silty downwards Siltstone, olive-gray to medium-gray, finely laminated, carbonaceous zones from 82.6 - 83.1 m and 83.7 - 84.1 m				1						-
from 82.6 - 83.1 m and 83.7 - 84.1 m Siltstone-Claystone, olive-black, finely laminated, carbonaceous	85—									
Siltstone-Claystone, olive-gray to medium-dark-gray, very hard tuffaceous zone from 85.9 - 86.0 m, pale-yellowish-brown										0.4
Claystone, medium-light-gray to medium-dark-gray, occasional carbonaceous stringers, 2 mm offset at 89.9 m Siltstone, medium-light-gray, massive, clayey						-	7.2	7.7		
Claystone, brownish-black, carbonaceous, becomes siltier and less carbonaceous downwards Claystone, brownish-black, carbonaceous Sandstone, medium-gray, fine- to coarse-grained, occasional carbonaceous stringers	95			•	•					
Coal, black, "Q bed", broken	-									
Claystone, medium-dark-gray, carbonaceous	100					_				
Siltstone, medium-dark-gray, finely laminated, fine- to medium-grained sandstone at base	T.D. 102.1	n			ţ	, I	1	•		

EXPLANATION

||||| Clayey SANDSTONE SILTSTONE Carbonaceous CLAYSTONE CLAYSTONE- CARBONACEOUS 1/ Tested in accordance with ASTM D 422-63.

2/ Tested in accordance with ASTM D 423 and D 424.

 $\underline{3}$ / Tested in accordance with ASTM D 854 and Chleborad and others, 1975. 4/ Tested in accordance with method described by Franklin and Chandra, 1972.

5/ Tested in accordance with method described by Brock and Franklin, 1972.

Calculated in meganew tons/meters² using the formula: U=I_s(50) X 24. Diametral test (loaded parallel to bedding planes)

Axial test (loaded perpendicular to bedding planes)

6/ Tested in accordance with ASTM D 2166-66.